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study of children's ideals as obtained from a questionnaire answered by 1,431 children. Although subject to many difficulties of exact interpretation, the results agreed with similar studies in "attesting (*a*) diminution of acquaintance ideals with age; (*b*) increase of public characters as ideals with age; (*c*) predominance of acquaintance ideals with girls; (*d*) small number of ideals from fiction and also (*e*) from religion; (*f*) girls choose more ideals from the opposite sex than do boys."

Mr. Williams's paper on "Precocity" gave a detailed treatment of the methods employed and results achieved in the education of John Stuart Mill and the son of Boris Sidis. In his conclusions he maintained that "proper intellectual education inevitably leads to precocity," and that the prime factor in this is the maintenance of an affective disposition of satisfaction in performing the work prescribed. A set of rather definite rules of procedure were also laid down.

The sessions of the Society were brought to a close by Professor Barnes's report on the pressure curve in voluntary control. His experiments had to do with learning to move the ring finger voluntarily. Comparative results in the pressure curve of the two adjacent fingers were obtained by instructions to relax and to contract the muscles of these fingers. Automatism was acquired more rapidly by the subjects instructed to relax, than by those instructed to contract. The curve was at first irregular, but after inhibition was learned it remained practically constant, being more regular and less in extent for the subjects instructed to relax. "When the hand is supported, pressure seems to be an important element of the process of inhibition during the learning process, but gradually decreases in intensity as automatism is approached."

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REVIEWS AND ABSTRACTS OF LITERATURE

A Text-book of Psychology. EDWARD BRADFORD TITCHENER. New York: The Macmillan Company. 1910. Pp. 565.

The present "Text-book" was prompted by the insistence of colleagues, pupils, and publisher that a book be written to take the place of the author's "Outline." The book aims to furnish an example of the "type of texts which emphasize the necessity of an experimental control of introspection, but which seek further to systematize the experimental data and to relate the psychology of the laboratory to that of the pre-experimental and non-experimental treatises."

As compared with the 350-page "Outline," the "Text-book" contains 565 pages, with 149 sections informally organized under general topic headings. Selected references for further reading, absent from the "Outline," are given after each section. The book contains 65 figures, chiefly of laboratory apparatus for the most part neither described nor referred to in the text.

The "Text-book" is not in any way a working over of the "Outline," but seems to be a totally fresh writing up of the fundamental principles of normal introspective psychology from the original point of view, a point of view which emphasizes, as did the "Outline," for the most part, the doctrine of elements and laws of connection, the process character of elements, the analysis of attributes (including clearness), the doctrine of parallelism, the two-level theory of attention, the elementary psychology of affection, the one-dimensional character of feeling, the method of introspection—a fairly consistent body of doctrine which has characterized all the writings of this author.

Yet the order of treatment follows, in a general way, the arrangement of chapters in the "Outline." The discussion of method is omitted because adequate treatment at the present stage is beyond the limit of a text-book. Since the "Text-book" is designed to replace the "Outline," it may be worth while to point out briefly the chief points of difference between the two.

An introductory section discusses the subject-matter, method, and problem of psychology, and adopts parallelism as a working hypothesis. The problem is conceived to be the discovery of mental elements and the laws of their combination. The method is declared to be that of introspection, but introspection in such a sense that "it is not so absurd as at first thought it seems, to say that we require the animal and society and the madman to introspect." Reference to the nervous system is made only for the sake of the "unity and coherence which a strictly descriptive psychology can not achieve."

In the section on sensation the emphasis is on the attributes, which are now quality, intensity, duration, and clearness, instead of the quality, intensity, duration, and extent of the "Outline." There are sensations for which the list is longer. "Vision and cutaneous pressure possess extent; hearing and smell are spaceless; the other cutaneous sensations, organic pressure and pains, and kinesthetic sensations, are endowed with the spatial attribute, although they play parts of varying importance in space perception."

Thirty-four pages are given to vision instead of the five of the "Outline." There is less effort to enumerate qualities for the mere sake of number, and Hering's theory is given prominence. Sound, taste, and smell come in for a clear discussion of 49 pages as compared with the 11 of the "Outline." There are separate sections for cutaneous, kinesthetic, and organic sensations, and for synesthesia. Organic sensations receive unusually complete and careful description and analysis. Less emphasis is placed on the numerical expression of Weber's law. Instead there is a more general discussion of the validity of units of mental measurement.

In the "Outline" the differences between sensation and affection were stressed. In the "Text-book" the emphasis falls on their common ancestry. "The writer holds that there is an elementary affective process, a feeling element, which in our minds is coordinate with sensation and distinguishable from it, but which is nevertheless akin to sensation and is derived from the same source, made out of the same kind of primitive mental material." Affection possesses the attributes of quality, intensity, and duration, but is distinguished from sensation by lack of clearness and by the presence of qualitative opposition. "The resemblance is so great that the two processes are evidently derived from a common mental ancestry; the difference is so great that we have no choice but to rank affection in human psychology as a second type of mental element distinct from sensation." The notion advanced in the "Outline" that the anabolic and katabolic bodily changes give rise to the affective processes is abandoned. The author hazards the guess that the peripheral organs of affection are the free afferent nerve endings not yet developed into specialized sense organs and that pleasantness and unpleasantness might have become sensations if mental development had only been carried further. This is an interesting leap of scientific imagination, and one is tempted to hope that since it has "lived long enough to be mentioned in a text-book," it will not "die and be dissected in the pages of psychological magazines" (see p. 49). The author warns the student, who is constantly being advised against speculation, that this theory of the bodily conditions of affection is simply a guess. Nevertheless four pages are devoted to it.

In the "Outline" attention was discussed as a process of reinforcement or inhibition of an excitation by the explosive discharges of cells in the frontal lobes. In the "Text-book" the situation is much modified. "Attention is identical with sensory clearness." The specific rhythmic reinforcement or inhibition by the frontal lobes as the physiological condition of attention is replaced by such general terms as cortical facilitation and inhibition, and further judgment is suspended until more is known of the physiological mechanism of these processes.

The two-level theory is deliberately expounded in the text, although hidden away in the references for further reading is the confession that the author "has fallen into the common psychological mistake of generalizing his own experience" (p. 302). The "consolation that the multilevel modes of attention were first observed" in the author's own laboratory seems hardly sufficient justification for concealing them from the student.

In place of the long and rather loosely organized chapter on perception and idea in the "Outline," we have here five excellently presented special sections on spatial, temporal, qualitative, and composite perceptions, and the psychology of perception.

Association receives shorter treatment, with less emphasis on formal classification and more on the analysis of the association consciousness. The section on memory and imagination stresses chiefly the introspective content of the memory and imaginative consciousness, and is characterized by the ever-present tendency to explain things by "cortical set," the assumption of which is said to outrun by far the experimental evidence.

The paragraphs subsumed under the general title "Action" discuss the reaction experiment in detail, the genesis and classification of action, and will, with a gratifying extension of analysis and introspection to the action consciousness, and with emphasis on the reaction as an end, rather than as a mere means of psychometry. This section seems, however, rather long drawn out, while the whole topic of instinct is dismissed in four paragraphs of fine print.

A conservative and trenchantly written section on emotion emphasizes the need for further introspective work. The section has for its core the exposition, criticism, and modification of the James-Lange theory. The modification points out the importance of affection as an elementary process attaching to simple perceptual material, and as the chief component in the emotion, which is defined as the affective reaction to a total situation. A brief discussion of the sentiments follows, replacing the long chapter on sentiment found in the "Outline."

The recent study of the higher thought processes is recognized in a section of 45 pages, dealing with such topics as conscious attitudes, cortical set, feelings of relation, determining tendencies, the reduction or decay of ideas and emotions, judgment, comparison and discrimination, the self, etc. Every teacher will appreciate the value of such a summary, though all may not agree that the subject is ready for incorporation in standard text-books. The book throughout gives one the impression that the author has great faith in the ultimate explanatory value of "unconscious cortical set" and the "universal law of mental growth and decay." And one senses a certain note of expectancy in the constant tentative introduction of the two ideas into every section dealing with the so-called higher mental processes.

Criticism, in such a review, must be largely confined to the book as a whole. To the structurally minded, whose introductory students are college juniors or seniors, the book will be at once welcome as a class text, and will easily supplant anything else in the field. But it seems to have been written for students much more mature than those for whom the "Outline" was adapted. To those for whom the biological point of view is a desideratum in an introduction to psychology, the text is, nevertheless, admirably suited for reference work; or, on the table of the instructor, it will afford a wholesome check on ultra-biological tendencies. The book will be especially valuable to the advanced student and to the young instructor for its honest attempt at complete systematic treatment, its insistence on verification, and the wealth of elementary fact contained in it.

The author's excuse for not including discussions of the nervous system and sense organs is that the student should get this knowledge from the physiologist, and that the psychologist needs all the time at his disposal for his own science. But a text-book should be adapted to present needs rather than to ideal conditions. As a matter of fact the ordinary student beginning the study of psychology has not yet been provided with adequate neurological information, and the psychologist usually finds it necessary to devote some of his time to laying this most necessary foundation. A text-book designed for present needs should help the teacher minimize this time. To that end the reviewer feels that nothing would be lost and much gained by the inclusion of cuts of the sense organs, brain, and cord, and the nervous elements, even if the space required should necessitate the omission of such pictures as that of the horse hair and match, the horopter model, Exner's model and Koenig's difference tone apparatus. The mere inclusion of the cuts with simple lettering or brief description would undoubtedly increase the serviceableness of the book for a considerable number of teachers.

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The Reasoning Ability of Children of the Fourth, Fifth, and Sixth Grades. FREDERICK D. BONSER. *Columbia University Contributions to Education,* No. 37.

This monograph is by far the most thorough statistical study of the reasoning ability of children that has been published. The tests used were carefully chosen, care was exercised in giving the tests, the plans for grading the results were well carried out, while every approved method of manipulating the figures so as to show just what the data signify were used.

Tests I. and II. consisted of well-selected arithmetical problems involving reasoning ability with only slight mechanical use of figures. Test III. consisted of incomplete sentences and of sentences involving the use of one or the other of two words, such as " Days are longer (or shorter) in summer than in winter." Test IV. consisted of a number of shorter words whose opposites were to be written. Test V. consisted of a number of statements of reasons from which the children were to select those that seemed good. Test VI. consisted of a number of definitions of simple words from which the pupils were to select those that were good. Test VII. called for the writing of the meaning of two stanzas of poetry.

The children tested were 385 boys and 372 girls of the fourth, fifth, and sixth grades. The general conclusions as summarized by the author follow:

" 1. In the progressive development shown in median ability through the grades tested, and in the high group correlations among these tests, it is evident that they are valid measures of several phases of that complex capacity we call reasoning ability.

" 2. In the contrasts between grade progress and progress with age, in the generally superior showing made by the younger groups of children of any grade when contrasted with the older pupils of the grade, and in the fairly substantial percentage of pupils from lower grades found in the highest quartile of ability for all, it is shown that native capacity is measured to a high degree by the tests.

" 3. In consideration of the rather varied range of information required, as well as the sagacity necessary to resolve the problems, all of the